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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,807	09/08/2003	Li Cai	1010.8117UU	1164

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SUITE 3200
MPIS, MN 55402

EXAMINER

PAK, SUNG H

ART UNIT PAPER NUMBER

2874

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H:8

Office Action Summary	Application No. 10/657,807	Applicant(s) CAI ET AL.	
	Examiner Sung H. Pak	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) 36-49 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-18 is/are allowed.
- 6) ☒ Claim(s) 19, 20 and 22-35 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicants' amendment filed 7/07/2005 has been entered. The claim amendment and the arguments for patentability have been carefully studied by the examiner. In view of the amendment, a new ground of rejection is provided in this office action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 19-20, 22, 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanaka (US 6,430,204 B1).

Tanaka discloses an optical device with limitations set forth in the claims, including a semiconductor laser comprising a substrate having an upper surface, a lateral direction being defined parallel to the upper substrate surface (Fig. 13); one or more superstrate layers provided on the substrate and an optical waveguide disposed over the substrate to guide light passing between ends of the substrate and defining a fundamental optical mode, first and second sides of the optical waveguide providing optical confinement in the lateral direction, the optical confinement for the fundamental optical mode provided on the first side of the optical waveguide being different from the optical confinement provided on the second side of the optical waveguide (Fig. 13- because of the different slant angle for the waveguide '17' the fundamental

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mode confinement of the waveguide is inherently different between the two sides); wherein the waveguide includes a ridge waveguide formed from a semiconductor ridge disposed along the substrate (Fig. 13).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka (US 6,430,204 B1).

Tanaka discloses an optical device with limitations set forth in the claims as discussed above, except it does not explicitly teach the use of Bragg grating frequency selector as claimed

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in the instant application. However, the use of Bragg grating frequency selector is well known and common in the art. Such frequency selector is considered advantageous and desirable in the art because it provides integrated and effective means of selective laser beam generation without the need for additional components and manufacturing costs. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the device of Tanaka to have Bragg grating frequency selector as claimed.

Claims 27-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamakawa et al (US 5,993,073) in view of Tanaka (US 6,430,204 B1).

Hamakawa discloses an optical device with all the limitations set forth in the claims, except it does not explicitly teach the use of asymmetric ridge waveguide laser as claimed in the instant application.

Specifically, Hamakawa teaches: an optical transmitter ('1' - Fig. 1); a fiber optic link coupled to receive optical signals from the optical transmitter ('21' - Fig. 1); an optical receiver coupled to the fiber optic link to receive the optical signal (not explicitly shown but receiver device is inherently disclosed- column 1 lines 3-54); a laser coupled to inject light into the fiber optic link ('11' Fig. 1); wherein the laser is disposed within the optical transmitter (Fig. 1); wherein the fiber optic link includes at least one fiber amplifier unit having a length of fiber amplifier, the at least one fiber amplifier unit including the laser coupled to inject pump light into the length of fiber amplifier (Fig. 10; column 5 lines 54- column 6 lines 25); wherein the laser includes a frequency selector selecting output wavelength of pump light generated by the laser

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(‘FG1, FG2’ Fig. 1); wherein the selector is a Bragg grating (column 4 lines 7-17); wherein the laser is thermally coupled to a thermoelectric cooler (‘13’ Fig. 1).

On the other hand, Tanaka explicitly teaches an asymmetric ridge waveguide laser with limitations set forth in the claims as discussed above. Tanaka teaches that such a waveguide laser device is advantageous over the prior art device because it allows stable control of transverse mode and prevents beam steering phenomena.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Hamakawa device to have asymmetric ridge waveguide laser of Tanaka.

Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamakawa et al (US 5,993,073) in view of Tanaka (US 6,430,204 B1) as applied to claims above, and further in view of Mizrahi (US 5,673,129).

Hamakawa and Tanaka render all the recited limitations of the claims obvious as discussed above, except they do not explicitly teach: the use of control circuitry to control and modulate operation of one or more transmitter lasers in response to incoming information; and multiplexer and demultiplexer, multiplexing signals of at least two transmitter lasers having different wavelengths, and demultiplexing that signal to component signals that are received by respective detectors.

Mizrahi, on the other hand, explicitly teaches the use of control circuitry to control and modulate operation of one or more transmitter lasers in response to incoming information (abstract; Fig. 2A), and multiplexer and demultiplexer (Fig. 2A, Fig. 2C), multiplexing signals of

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at least two transmitter lasers having different wavelengths, and demultiplexing that signal to component signals that are received by respective detectors.

The use of control circuitry is considered advantageous and desirable in the art, because it allows for accurate and precise fine-tuning of transmission light signal, and limits transmission error. The use of multiplexers and demultiplexers are considered advantageous and desirable in the art because they allow multiple transmission signals to be transmitted over a common transmission line, which increases transmission efficiency and bandwidth.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Hamakawa device in view of Tanaka and Mizrahi references to have control circuitry, multiplexer and demultiplexer as claimed in the instant application.

Allowable Subject Matter

Claims 1-18 are allowed.

Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: as discussed in the previous office action and this office action, a semiconductor laser device having ridge waveguide is well known and common in the art. Such semiconductor laser device having different fundamental mode confinements between the two side surface regions of the ridge waveguide is also known in the art as discussed above.

However, none of the prior art fairly teaches or suggests such semiconductor laser having first and second sides on the opposite sides of a ridge waveguide, along the waveguide, wherein the height (or the depth) of the first side region above the substrate is different from the second side region as claimed in the instant application.

Response to Arguments

Applicant's arguments with respect to claims 1-35 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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A handwritten signature in black ink, appearing to read 'Sung H. Pak', with a long horizontal stroke extending to the right.

Sung H. Pak
Patent Examiner
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